stalked and shot one with a .375 Mannlicher. At the report of the rifle the number of these birds that got up fairly took my breath away. As far as I could see bustards were visible in flight, not in a flock but scattered all over the countryside. I cannot say definitely if they all flew in any one particular direction to suggest some form of migration, but as far as I can recollect they did not. I do not think that there could have been less than 400 birds. The cock I shot weighed 28 lbs. after it had been gutted.

BELAPUR,
AHMEDNAGAR DIST. FARID H. B. TYABJI
July, 1952.

[In Vol. XXVI of the *Journal* (p. 1048) is given an extract from the defunct—*Oriental Sporting Magazine* which records 961 bustard shot near Ahmednagar between the years 1809 and 1829 by a single 'Lover of all Sports' as he calls himself. He gives the weight of cock birds as between 18 and 32 lbs. and that of hens 8-15 lbs.

From the above, and other available records, it would appear that the Deccan country in the neighbourhood of Ahmednagar has always formed the optimum habitat of the Great Indian Bustard.

Spread of cultivation and increasing population pressure with its attendant evils have doubtless been mainly responsible in reducing this magnificent species to its present parlous state. Its preservation from extinction is a matter that deserves the highest priority from the Indian National Section of the International Committee for Bird Preservation and calls for the most urgent and effective action. The present status of the bird must be thoroughly and authentically investigated, and in the meantime its shooting, snaring or killing in any other way and the taking of its eggs totally banned forthwith in every part of the Indian Union.

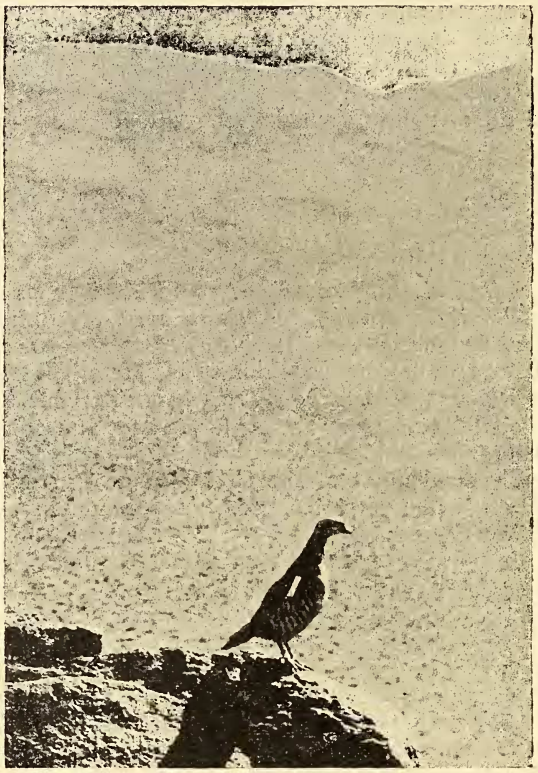
It is perhaps too much to hope that there may still be tracts of country sufficiently remote and unexploited to offer a sight such as described by our correspondent. But should there be anything even distantly approaching it, no time must be lost in turning them into adequately controlled sanctuaries for the bird.—EDS.]

14. OVERWINTERING OF THE CHUKAR PARTRIDGE (*ALECTORIS GRAECA*) IN NEVADA, U.S.A.

(*With a photo*)

Since its introduction into the state of Nevada in 1933 the Chukar Partridge (*Alectoris graeca chukar*) has risen from the ranks of an experimental exotic to an upland game bird of primary importance. In the short time of 19 years this species has, mainly through natural propagation, thoroughly established itself throughout a major portion of the state's vast amount of rocky, rugged, mountainous habitat at elevations ranging from 4,000 to 8,000 ft. Although factual evidence is at present insufficient it is probable that the chukar now has a

distribution in Nevada which is nearly as widespread as that of our native Sage Grouse (*Centrocercus urophasianus*).



A chukar which has been marked with plastic neck tags for study purposes. Note the rocky outcrops. Dominant vegetation is sagebrush (*Artemisia tridentata.*) Elevation is 5,000 feet. This bird had been released one week previously at the above site which is near Winnemucca Lake, Washoe County, west-central Nevada. The type of habitat shown is fairly typical of that found in favorable chukar range in the State. (Photo by author).

The 1951 hunting season varied in length from 2 to 62 days (depending on the county) with a bag limit of 5 birds daily and in possession. From this it can readily be seen that the chukar is now taking the lead in providing excellent upland bird hunting to residents of Nevada. With this in mind the Nevada Fish and Game Commission (Wildlife Restoration Division) has established a project under which intensive natural history studies of the chukar are to be made upon which it will be possible to base future management procedures.

Although this program has been in effect for only a short time it is currently possible to evaluate to some extent the effects of winter conditions upon the bird. The winter of 1951-52 was exceptionally severe over most of the State and certainly represented the

most severe winter (in the amount of total snowfall) that has occurred since the introduction of the chukar. Observations by the author (Christensen, 1952 *a*) showed that during the first heavy snowfall in west-central Nevada the birds rapidly descended from the higher mountains (8,000-6,000 ft. elev.) to congregate in large numbers (coveys of from 11-150 birds) on the lower slopes and valleys (5,000-4,000 ft. elev.) which were relatively snow free and where feed was available. Later as the snow receded and the higher slopes were cleared through wind action the birds again ascended to the higher hills. Such actions were consistent throughout the course of the winter and no distress was noted among the birds as long as they were able to descend to areas which lay below the snow line (in general this was about 4,000 to 4,500 ft. elev.).

Food studies which were made during the years 1951 and 1952 (Christensen, 1952 *a*) showed that during the winter months the primary foods of the chukars were the leaves of green grasses and winter annuals. Because of this it was therefore indicated that the distribution of this species into the more northern portions of the state where heavy, long laying snows are prevalent may retard its success. Evidence for this supposition was clearly brought out during the month of March when chukars were found in a starving condition at Birch Creek, near Austin, Nevada (Christensen, 1952 *b*). Twelve dead birds were found, and one live bird (an adult female) was collected. This bird weighed only 11.85 ozs. as compared to 17.50 ozs. for a healthy female bird. Deep snow, which made grasses and annuals unavailable, had persisted in this area for a number of weeks. Due to the high elevation of this and surrounding country (6,000 ft. and above) it had not been possible for the birds to move down to snow-free elevations without moving for long distances and entirely out of the habitat. Several large coveys of chukars, which were in poor condition, were noticed to have congregated on feeding areas which had been provided for cattle, where they gleaned a meagre living off barley hay or cottonseed cake.

Although browse plants (such as *Artemisia tridentata* and *Purshia tridentata*) were protruding above the snow there was no evidence of their utilization by the chukars despite their availability. This again indicated the dependence of the chukar upon green grasses and annuals as winter foods.

NEVADA FISH & GAME COMMISSION,
(WILDLIFE RESTORATION DIVISION), GLEN C. CHRISTENSEN
RENO, NEVADA,
May 15, 1952.

LITERATURE CITED

Christensen, Glen C. (1952 *a*): An ecological study of the chukar partridge in western Nevada. Univ. of Nevada Library, M. S. Thesis, unpubl. 83 pp.

— — — (1952 *b*): Upland game survey, chukar and sage grouse. *Quarterly Report of the Nev. Fish & Game Comm., Wildlife Restoration Div.*, March 1952, pp. 38-41 (mimeographed).